

In re Patent Application of:
MCGETTIGAN ET AL.
Serial No. 10/785,589
Filed: 02/23/2004

REMARKS

Claims 1-20 are in this case. Claims 1, 11 and 20 are currently amended.

Claims 1,2,4,5,11,12,14,15 and 17-20 are rejected under 35 USC 102(a) as anticipated by Seiberle.

Claims 3,10,13 and 16 are rejected under 35 USC 103(a) as obvious in view of Seiberle.

Claims 6-9 are rejected under 35 USC 103(a) as obvious in view of Seiberle and Daishinku Corp.

The present invention relates to anti-aliasing filters, also called blur filters, for digital imaging devices. The anti-aliasing filter is comprised of one or more DRP (double refraction plate) formed of a birefringent material having its optical axes arranged such that an incoming light is separated through the DRP into an o-ray and an e-ray of orthogonal polarizations. The anti-aliasing filter is used to prevent higher frequency image components (higher than the device pixel spacing) from appearing at the photodetector array. The filter is used for example, in digital cameras, camphones, and video recorders.

In the final Office Action, it is argued that the claimed structure of a DRP comprising at least a layer of an LPP material and a layer of an LCP material is not a different

In re Patent Application of:
MCGETTIGAN ET AL.
Serial No. 10/785,589
Filed: 02/23/2004

structure from a retarder, a polarizer or any other structure comprising these materials. This denies the fact that a DRP is a known optical structure with a known function commonly understood in the art as used in the current application. A person of skill in the art would certainly recognize the differences between these structures by name whether they are made of quartz or LCP.

Since the term DRP of claim 1 has not been given patentable weight, amendment to provide structure in the nature of definition has been added to clearly distinguish the structure of a DRP from the thin film for display structures presented by Seiberle. These amendments define the commonly understood structure of the originally filed claim terms. Similarly in claim 11 "retarder" has been defined. Support for these amendments can be found in paragraphs [0011], [0038] and [0015].

Claim 1 has been further amended to provide structure to the anti-aliasing function, which in combination with a photodetector array provides separation of incoming light rays sufficient to "substantially illuminate two adjacent pixels of the photodetector array." This amendment also provides definition of originally filed claim terms. Support for these amendments can be found at paragraphs [0005], [0008] and [0012].

35 USC 102

It is argued that the anti-aliasing filter as claimed is anticipated by Seiberle et al. of Rolic Technologies Ltd. in an article entitled "Photo-Aligned Anisotropic Optical Thin Films."

In re Patent Application of:
MCGETTIGAN ET AL.
Serial No. 10/785,589
Filed: 02/23/2004

As claim 1 and claim 11 have been amended to define the structure of a DRP originally claimed, as well as the structure enabling the anti-aliasing function, it is clear that the teaching of Seiberle does not foresee or suggest the use of the Rolic material as a DRP, nor its advantages for use as an anti-aliasing filter.

The research by Seiberle et al. is directed toward enhancing the performance of an image reproducing device, where a digital signal is converted to a digital image. In such a system aliasing does not occur. The present invention is used in image capturing devices, where an analog signal is converted to a digital signal and aliasing can occur. Suggested constructions proposed by Seiberle et al. are directed to enhanced viewing angles for TN-LCD projection display devices. The structures and examples disclosed by Seiberle et al. are all directed to polarizers or retarders, which change the polarization state of the incoming light but do not separate component polarizations. For a projection system, blurring from a blur filter would be an undesirable feature.

In particular with respect to claim 1 Seiberle et al. do not disclose these claimed elements: "a first double-refraction plate ... having a thickness selected so as to provide a selected separation, d, of ordinary and extraordinary light rays such that d is large enough for the separated ordinary and extraordinary light rays to substantially illuminate two adjacent pixels of the photodetector array." No birefringent plates for separation of polarization states are suggested in

In re Patent Application of:
MCGETTIGAN ET AL.
Serial No. 10/785,589
Filed: 02/23/2004

the Seiberle et al. reference. Seiberle discloses a thin film for enhancing the viewing angle of a liquid crystal panel, over a small angular range, in projection display devices. As discussed above, such a technology has no use for separation and blurring, or for photodetectors.

Figure 5 of the Seiberle reference, the only example where the optical axis is not parallel to the surface of the material layers, shows "Retarders with tilted optical axis (o-plate) allow to compensate for the residual off-axis retardation of TN-LCDs, thus enhancing the viewing angle range." Polarization separation using the thin film of Seiberle is not considered. This is because the very small dimension of the thin film makes any separation of light inconsequential to Seiberle and to the present application.

Seiberle et al. do not disclose the structure of the blur filter claimed. The structures disclosed by Seiberle do not separate ordinary and extraordinary rays to substantially illuminate adjacent pixels of a photodetector array. This is not an engineering choice of film thickness, but a completely different application of a same material. The fact that it is the same material, does not suggest its use for a problem unrelated to the disclosed technology, in a different structure for use with photodetectors unrelated to the disclosed technology.

Claim 1 is not anticipated by the Seiberle reference, which does not disclose the claimed elements, the claimed function or

In re Patent Application of:
MCGETTIGAN ET AL.
Serial No. 10/785,589
Filed: 02/23/2004

the claimed results. Claim 11 has been amended in parallel to the amendments to claim 1. Dependent claims 2,4,5,11,12,14,15 and 17-20 are asserted as novel for the same reasons as claim 1 above.

Claim 20 is rejected in view of elements "inherent" to obtain the data disclosed in Seiberle. Claim 20 has been amended to more clearly define the invention including the example disclosed at paragraph [0045]. Namely, "a package for providing environmental security to an imaging device; and

a photodetector array disposed within the package, the anti-aliasing filter being disposed on a lid of the package."

35 USC 103

Claims 3,10,13, and 16 are rejected as obvious in view of Seiberle. Given the amendments and arguments presented above, this is respectfully traversed. It is argued in the Office Action that "Seiberle teaches the invention as claimed and suggests that the materials used for the LPP and LCP in the anti-aliasing filter can be chosen to provide any desired results." "Any desired results" is not disclosure or suggestion to create an anti-aliasing filter, in view of the thin film disclosed. Seiberle states, "the process compatibility with flexible substrates and the possibility to adjust the optical axis to any azimuthal and polar angle makes it ideal for large volume roll-to-roll production of retarders and wide view films for LCDs. Stacking of LCP layers with individual optical functionality leads to compact films with new optical features." The positive teaching is limited to LCD display film. And such a

In re Patent Application of:
MCGETTIGAN ET AL.
Serial No. 10/785,589
Filed: 02/23/2004

vague suggestion of providing "new optical features" cannot be said to be a suggestion to produce anti-aliasing filters. The claimed structures of claims 13 and 16 are not suggested by function or structure in the Seiberle reference. The introduction of adhesive in claims 3 and 10 does not render the novel structure of claim 1 obvious in view of the teaching of Seiberle.

Claims 6-9 are rejected as obvious in view of Seiberle in combination with Daishinku Corp. "Optical Low Pass Filters." The Daishinku Corp. reference is a specification for low pass filters comprising one or two double refraction plates formed of quartz, as known in the prior art. Claim 6 defines an anti-aliasing filter having a thickness between 10 and 150 microns. The Daishinku Corp. specifications give a minimum thickness of at least 280 microns (.28mm) for a single quartz layer. There is no specification in Daishinku suggesting a thickness between 10 and 150 microns, this assertion in the Office Action is in error. The disclosure of Daishinku Corp is only related to quartz/glass constructions. The teaching of Daishinku can be viewed as evidence that a "double refraction plate" is a recognized term in the art having a known structure and function. Beyond this, any combination of Daishinku and Seiberle can only find motivation in the teaching of the present application.

In view of the foregoing amendments, it is respectfully submitted that the instant application is in condition for allowance.

In re Patent Application of:
MCGETTIGAN ET AL.
Serial No. 10/785,589
Filed: 02/23/2004

Reconsideration of the Examiner's rejections is respectfully requested.

Applicants request confirmation of consideration of the IDS previously mailed to the U.S. Patent and Trademark Office on July 27, 2005.

Should any minor informalities need to be addressed, the Examiner is encouraged to contact the undersigned attorney at the telephone number listed below.

Please charge any shortage in fees due in connection with the filing of this paper, including Extension of Time fees, to Deposit Account No. 50-1465 and please credit any excess fees to such deposit account.

Respectfully submitted,



CHARLES E. WANDS
Reg. No. 25,649

Telephone: (321) 725-4760

CUSTOMER NO. 27975

CERTIFICATE OF FACSIMILE TRANSMISSION

I HEREBY CERTIFY that the foregoing correspondence has been forwarded via facsimile number 571-273-8300 to MAIL STOP AF, COMMISSIONER FOR PATENTS, this 14 day of March 2006.

